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State of Utah

Department of
Natural Resources

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OK

August 25, 2004

Gary Gray, Resident Agent
Genwal Resources, Inc.
P.O. Box 1077
Price, Utah 84501

Re: South Crandall Lease Revision, Genwal Resources, Inc., Crandall Canyon Mine, C/015/0032, Task ID# 1945, Outgoing File

Dear Mr. Gray:

The above-referenced significant revision has been reviewed. A copy of our Technical Analysis is enclosed for your information. In order for us to continue to process your application, please respond to these deficiencies by September 4, 2004.

If you have any questions, please call me at (801) 538-5268 or Joe Helfrich at (801) 538-5290.

Sincerely,

D. Wayne Hedberg
Permit Supervisor

an
Enclosure
cc: Price Field Office
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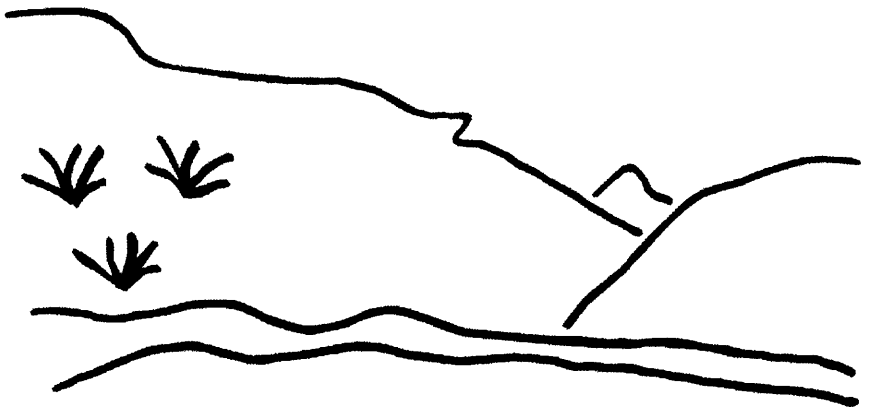
State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Crandall Canyon
South Crandall Lease Revision
C/015/0032, Task ID #1945
Technical Analysis
August 25, 2004

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TECHNICAL ANALYSIS

The Division ensures compliance with the Surface Mining Control and Reclamation Act of 1977(SMCRA). When mines submit a Permit Application Package or an amendment to their Mining and Reclamation Plan, the Division reviews the proposal for conformance to the R645-Coal Mining Rules. This Technical Analysis is such a review. Regardless of these analyses, the permittee must comply with the minimum regulatory requirements as established by SMCRA.

Readers of this document must be aware that the regulatory requirements are included by reference. A complete and current copy of these regulations and a copy of the Technical Analysis and Findings Review Guide can be found at http://ogm.utah.gov/coal

This Technical Analysis (TA) is written as part of the permit review process. It documents the Findings that the Division has made to date regarding the application for a permit and is the basis for permitting decisions with regard to the application. The TA is broken down into logical section headings, which comprise the necessary components of an application. Each section is analyzed and specific findings are then provided which indicate whether or not the application is in compliance with the requirements.

Often the first technical review of an application finds that the application contains some deficiencies. The deficiencies are discussed in the body of the TA and are identified by a regulatory reference, which describes the minimum requirements. In this Technical Analysis we have summarized the deficiencies at the beginning of the document to aid in responding to them. Once all of the deficiencies have been adequately addressed, the TA will be considered final for the permitting action.

It may be that not every topic or regulatory requirement is discussed in this version of the TA. Generally only those sections are analyzed that pertain to a particular permitting action. TA's may have been completed previously and the revised information has not altered the original findings. Those sections that are not discussed in this document are generally considered to be in compliance.

TECHNICAL ANALYSIS

INTRODUCTION

On September 16, 2003 the Division received an application from Genwal resources Inc. to modify their mining and reclamation plan to include the new South Crandall Federal Lease (UTU-78953). On December 2, 2003 the Division sent the Technical Analysis document to the applicant as represented by Mr. Gary Gray. The Division received a response to the deficiencies enumerated in the Technical Analysis document on January 30, 2004. On March 18, 2004 the Division sent the Technical Analysis document to the applicant as represented by Mr. Gary Gray. The Division received a response to the deficiencies enumerated in the Technical Analysis document on April 7, 2004. The lease application encompasses 920 acres and can be located on the Rilda Canyon 7.5 minute quadrangle map in The Manti-La Sal National Forest. There is no surface disturbance associated with this lease acquisition. The applicant is currently developing portals adjacent to the existing surface facilities in order to gain access to the coal lease.

The South Crandall Canyon area was reevaluated and was leased to Andalex in June 2003 (lease UTU-78953). Access to the South Crandall Canyon Tract will be through new portals, (completed in 2004), on the south side of Crandall Canyon in fee coal (often referred to as the "Dellenbach" lease) owned by IPA and Andalex.

Little Bear Spring in Little Bear Canyon, located adjacent to the South Crandall Canyon Tract, is an important source of water for the Castle Valley Special Services District (CVSSD), supplying 65 percent of the culinary water to the residents of Huntington, Cleveland, and Elmo. It is probably the largest and most consistently flowing spring in the region, and the only water-treatment required before use is chlorination. CVSSD has great concerns about protecting this important water supply from mining related damage. The South Crandall Canyon Coal Lease Tract was deleted from the Mill Fork Tract because of concerns that were raised regarding Little Bear Spring.

INTRODUCTION

SUMMARY OF DEFICIENCIES

The Technical analysis of the proposed permit changes cannot be completed at this time. Additional information is requested of the permittee to address deficiencies in the proposal. A summary of deficiencies is provided below. Additional comments and concerns may also be found within the analysis and findings made in this Draft Technical Analysis. Upon finalization of this review, any deficiencies will be evaluated for compliance with the regulatory requirements. Such deficiencies may be conditioned to the requirements of the permit issued by the Division, result in denial of the proposed permit changes, or may result in other executive or enforcement action and deemed necessary by the Division at that time to achieve compliance with the Utah Coal Regulatory Program.

Accordingly, the permittee must address those deficiencies as found within this Draft Technical Analysis and provide the following, prior to approval, in accordance with the requirements of:

Regulations

R645-301-122, The Permittee must provide a copy of the letter from the BLM concerning the approval of the R2P2. 19

R645-301-722.300, the Permittee needs to provide a detailed hydrologic map of the Little Bear Canyon watershed showing geology and mining projections as described under the "Monitoring and sampling Location maps" section of this review document. 17

R645-301-722.300, the Permittee needs to update and clarify any changes in the identity and/or location of the springs found within the Little Bear Canyon watershed to be accurately represented in the text and on Plates 7-12 and 7-18. 17

SUMMARY OF DEFICIENCIES

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

Page 1-7 of the approved MRP (not submitted in Task #1698, Task #1826 or Task #1903) was identified in the deficiencies of Task #1698, #1826 and #1903. There is a statement on this page, "IPA is currently engaged in the reclamation of the Horse Canyon Mine, under permit ACT/007/013, located in Emery County, Utah..." that is incorrect. Editing and/or removal of this statement was requested in Task # 1698, #1826, and #1903, since IPA no longer has connections or ties to the Horse Canyon Mine. Task # 1945 is a response to Task #1903 and addresses this deficiency.

During the review of Task #1903 it was also noted that page 1-8 of the submittal lists an MSHA number (42-01715) for IPA, Horse Canyon Mine. This number was removed in the submittal of Task #1945.

Findings:

Information contained in this portion of the application meets the requirements set forth in this regulation.

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

Page 1-16 of the approved MRP was included in the application for Task #1826, but needed to be updated and submitted as part of the application for Task # 1903. Task #1945 includes Page1-16 and the date is current to cover the submitted changes.

Findings:

Information contained in this portion of the application meets the requirements set forth in this regulation.

GENERAL CONTENTS

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Analysis:

There is geologic information for the permit and adjacent areas in the current MRP, including the proposed South Crandall Canyon Tract. Additional geologic information on the South Crandall Canyon Tract has been added. Maps showing geologic information have been updated to include the South Crandall Canyon Tract, including the 40-acre SITLA-PacifiCorp sub lease.

Test borings and coal sampling; coal seams, overburden, and strata

Drill hole and geological information for the South Crandall Canyon Tract has been added on pages 6-5 and 6-5a. HC-4, the only borehole in the South Crandall Canyon tract, provides information on coal seam thicknesses (driller's log in Appendix 6-6).

The lowest coal seam in the Blackhawk Formation is the Hiawatha, characteristically on or just above the Star Point Sandstone. This seam has been mined in the Cottonwood/Wilberg, Deer Creek, Des-Bee-Dove, Huntington #4, and Genwal #1 Mines. The Hiawatha Seam thins to less than 5 feet in the north end of the Cottonwood/Wilberg Mine, but then thickens again to the north. The Hiawatha Seam reaches a thickness of 12 feet in the Crandall Canyon permit area, located mainly north and west of the #1 Mine portal. For the Hiawatha Seam in the South Crandall Canyon Tract, thickness of the coal seam and cover are shown on Plate 5-2 (H), along with the Hiawatha to Blind Canyon interburden thickness. Seam thickness and cover for the Crandall Canyon #1 Mine area are on Plates 6-3 and 6-6.

The Blind Canyon Seam lies approximately 40 to 100 feet above the Hiawatha Seam. The Blind Canyon Seam has been mined in the Deer Creek, Huntington #4, and Des-Bee-Dove Mines, but is too thin to mine economically at the Cottonwood/Wilberg Mines. The Blind Canyon Seam is too thin for economic recovery from the Crandall Canyon #1 Mine, but this seam will be mined in the South Crandall Canyon Tract. For the Blind Canyon Seam in the South Crandall Canyon tract, thickness of the coal seam and cover are shown on Plate 5-2 (BC), along with the Hiawatha to Blind Canyon interburden thickness. Plate 5-2 (BC) shows that the seam is just less than 5 feet thick at HC-4 but thickens to the west. Blind Canyon Seam thickness for the Crandall Canyon #1 Mine area is on Plate 6-4.

The Bear Canyon Seam is too thin to mine economically in both the Crandall Canyon #1 Mine and the South Crandall Canyon Tract. Plate 6-5 is the Bear Canyon Seam thickness isopach map for the #1 Mine area. The Bear Canyon Seam is only 2 feet thick in borehole HC-4 (Appendix 6-6), the only borehole in the South Crandall Canyon Tract.

Test Borings and Coal Sampling information (section 6.22.1, pages 6-4 and 6-5) for the Crandall Canyon #1 Mine and South Crandall lease includes coal quality for both the Hiawatha and Blind Canyon Seams. Borehole HC-4 is the source of information for the South Crandall lease. Section 6.22.2 on page 6-5 includes information on coal reserves and on the nature, depth, and thickness of coal seams, rider seams, overburden, and interburden. Appendices 6-1, 6-5, and 6-6 contain additional geologic information.

The Permittee states in the last paragraph on page 6-5a that the thickness of the Blind Canyon Seam is, respectively, 59 and 40 inches at in-mine drill holes DH-1 and DH-2 (these drill holes and coal thicknesses are not shown on Plate 6-4; Plates 5-2 (H) and (BC) indicate a thickness of 56 inches at both drill holes) and 54 and 40 inches in surface drill-holes DH-3 and DH-4. The Permittee has mapped a relatively small area (the text states 60 acres, Plate 6-4 shows approximately 150 acres) where the Blind Canyon Seam has a thickness of 5 feet or more, and indicates the seam is fairly continuous across the property. The Permittee concludes that the Blind Canyon Seam does not contain sufficient coal (approximately 418,000 tons) for economic mining in the vicinity of the #1 Mine. The Blind Canyon Seam will be mined in the South Crandall Canyon Tract, where it is thicker.

Drill-hole locations for the South Crandall Canyon Tract are shown on Plates 5-2 (BC) and 5-2 (H). Reference is made in several places to Plate 5-2, which can be understood to cover 5-2 (H) and 5-2 (BC).

The first paragraph on page 6-6 refers to the State leases only, so the information regarding the coal seams in the State leases is sufficient.

Acid- and toxic-forming materials

For the Crandall Canyon #1 Mine, acid- and toxic-forming characteristics for strata immediately over and under the Hiawatha and Blind Canyon Seams in the #1 Mine area are discussed on pages 6-8 and 6-9. Analysis results for the Hiawatha coal also are discussed on page 6-9. The Permittee has not provided analyses for acid- and toxic-forming characteristics for the Blind Canyon Seam, in either the #1 Mine area or the South Crandall Canyon Tract. The Permittee states on page 6-9 of the proposed amendment that there is currently no access to unweathered Blind Canyon materials (the cores taken in 1981 at HC-4 are apparently not available for analysis); however, coal and adjacent strata will be analyzed when the rock tunnels reach the Blind Canyon Seam.

Engineering properties - clays and soft rock

According to section 6.24.34 on page 6-9, strata immediately above and below the "seam to be mined" do not contain clays or soft rock. Those statements are based on information in Appendices 6-1 and 6-5 and apply to the Hiawatha Seam only.

The lithology log of HC-4 in Appendix 6-6 shows the thickness of the claystone and shale immediately above and below the Blind Canyon Seam. There is currently no access to unweathered materials for analysis. Engineering properties will be determined after rock tunnels are constructed to the Blind Canyon Seam. The Blind Canyon Seam is not thick enough to allow the leaving of thick layers of coal on the roof and floor, and soft rock in the roof and floor increases the probability that there will be waste rock that will need to be disposed of.

Geologic information pertaining to hydrology (Little Bear Spring in particular)

Little Bear Spring is located adjacent to the South Crandall Canyon Tract, and CVSSD has great concerns about protecting this important water supply from mining related damage. Information on how geology may affect the occurrence, availability, movement, quantity and quality of potentially impacted surface and ground water in the South Crandall Canyon Tract and adjacent areas was studied extensively before the South Crandall Canyon lease was issued. Using these studies, the BLM and the Manti-La Sal National Forest concluded that mining in the South Crandall Canyon Tract has a low potential to disrupt Little Bear Spring, and they signed a FONSI in February 2003. Copies of the reports prepared from these studies are included in the proposed amendment as appendices to Chapter 7, and the appendices number and title are listed on page 6-7a.

Findings:

Geologic Resource Information is adequate to meet the requirements of this section of the regulations.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and Analysis

The permittee has added four spring and six stream monitoring locations to their existing water monitoring program. As stated in Section 7.2 Sampling and Analysis of the mines existing M&RP, "all water samples are collected and analyzed according to methods in either the

"Standard Methods for the Examination of Water and Waste Water" or the 40 CFR parts 136 and 434".

Baseline Information

A description of the hydrologic and geologic characteristics of the South Crandall lease area and the additional 40-acre sublease area has been added to Section 7.24.1 Groundwater Information and Section 7.24.2 Surface Water Information. Geologic characteristics of the lease area have also been included in Chapter 6. Baseline information of the premining groundwater and surface water features within and adjacent to the lease area is included as Appendix 7-58 Summary of Hydrologic Baseline Information, South Crandall Lease Area. Appendix 7-58 identifies and shows the locations of seeps, springs, surface water, and drainages that have been monitored within and adjacent to the lease area since 1980. Little Bear Spring and Little Bear Canyon Creek have been monitored since 1957 and 1970, respectively. The tabulated baseline data presents discharge, flow, and field parameter (including temperature, pH, and conductivity) data available for each monitoring site. Major ion, trace metal, and nutrient water quality data collected by Genwal in June and August, 2003, are also presented for the four springs and six surface water monitoring sites to be included in the Genwal water monitoring program for the South Crandall lease area and the additional 40-acre sublease area.

Supplemental hydrologic information has been added as Appendices 7-52 through 7-57, and 7-59 through 7-62 to address the complex hydrogeology of Little Bear Spring. Little Bear Spring is an important municipal water source and is located approximately 1,000 feet south of the South Crandall Lease Area in Little Bear Canyon. These appendices are scientific studies that describe, among other things, the groundwater systems encountered in the Crandall Canyon mine, their relation to Little Bear Spring, and the potential source of water for the spring. The studies indicate that Little Bear Spring is recharged primarily through surface water and alluvial groundwater losses in Mill Fork Canyon.

The listing of water rights in and adjacent to the permit boundary, as obtained from the Utah Division of Water Rights, has been updated on the groundwater and surface water rights maps (Plates 7-14 and 7-15, respectively), the tabulated listing of surface water rights (Table 7-6), and the supporting water rights information (Appendix 7-1).

Modeling

A conceptual recharge model of Little Bear Spring is presented as Appendix 7-55 Investigation of the Potential for Little Bear Spring Recharge in Mill Fork Canyon, Emery County, Utah. The model uses information obtained from studies presented in other appendices including two isotopic studies, an in-mine slug tests, a resistivity study, hydrogeologic information, and historical flow data. In addition, a dye tracing study and three electromagnetic (AquaTrack) studies of the Little Bear Spring recharge system are presented in the appendices. Combined, these studies make a compelling argument that the primary source of recharge to Little Bear Spring is through surface water and alluvial groundwater losses in Mill Fork Canyon.

Probable Hydrologic Consequences Determination

The Probable Hydrologic Consequences Determination (PHC) (Appendix 7-15) has been updated to include the hydrologic, geologic, baseline, and supplemental information provided for the South Crandall lease area and the additional 40-acre sublease area. Updates in the PHC center around the recharge source to Little Bear Spring and the potential impacts of the proposed mine workings on the spring. Studies indicate that fractures in the Star Point Sandstone act as a conduit to provide surface and alluvial water from Mill Fork Canyon to Little Bear Spring. Because this fracture system lies outside of the South Crandall Lease permit boundary, and a regional Star Point aquifer does not contribute to the fracture system, then it is considered extremely unlikely that the proposed mining activities will impact the spring. In addition, the Star Point Formation will not be undermined by the proposed mining in the South Crandall Lease Area because the coal seams proposed for mining are stratigraphically above the Star Point Formation.

Groundwater Monitoring Plan

The existing groundwater monitoring plan has been updated to include the monitoring of four springs located within and adjacent to the South Crandall lease area as shown on Plate 7-18. These sites include: Little Bear Spring, a municipal water source, that discharges water from fractures within the Star Point Sandstone and is located approximately 1,000 feet outside of the lease area; site LB-2 that discharges from the Castlegate Sandstone at the south end of the lease area; site LB-5A that discharges from a sandstone channel in the Blackhawk Formation overlying mining operations at the south end of the lease area; and site SP-79 that discharges from the Star Point Sandstone at the northeast portion of the lease area. All of the spring sites will be monitored for the field and laboratory water quality parameters listed in Table 7-4. Protocols for monitoring are listed in Table 7-10 of the M&RP.

Surface-Water Monitoring Plan

The existing surface water monitoring plan has been updated to include the monitoring of four creeks with six monitoring sites located within and adjacent to the South Crandall lease area as shown on Plate 7-18. The creeks to be monitored include: the intermittent Little Bear Canyon Creek, the ephemeral drainage in SW ¼ of Section 4 T16S R7E (Section 4 Creek), the ephemeral drainage located along the west permit boundary along the border of Sections 5 and 6 T16S R7E, and the intermittent creek in Section 5 T16S R7E that drains into Crandall Creek downstream of the Genwal surface facilities (Section 5 Creek). Little Bear Canyon Creek and Section 4 Creeks will be monitored approximately 100 feet above their confluence with Huntington Creek, the drainage along the west permit boundary will be monitored at station IBC-1 above the confluence with Crandall Creek, and Section 5 Creek will be monitored above the confluence with Crandall Creek and at two stations located at the confluence of the drainages upper left and right forks. All of the creek sites will be monitored for the field and laboratory water quality parameters listed in Table 7-8. Protocols for monitoring are listed in Table 7-10 of the M&RP.

Findings:

Hydrologic Resource Information is sufficient to meet the requirements of this section of the regulations.

Baseline Cumulative Impact Area Information

The Division is updating the East Mountain CHIA to incorporate the expansion of the Crandall Canyon Mine into the South Crandall Canyon Lease Tract.

Findings:

Geologic baseline cumulative impact information is sufficient to meet the requirements of the Coal Mining Rules.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Affected Area Boundary Maps

The proposed affected area boundaries will not change with this submittal.

Archeological Site Maps

The archeological site map provided for in appendix 4-1A of the MRP does not include the South Crandall lease addition. However Appendix 4-9 of the application includes a letter and a map of the lease area from Gary Gray to Jim Dykman. This information was provided to the SHPO on September 9, 2003.

Coal Resource and Geologic Information Maps

The Hiawatha Seam thickness isopach (Plate 6-3), Blind Canyon Seam thickness isopach (Plate 6-4), Bear Canyon Seam thickness isopach (Plate 6-5), Hiawatha Seam overburden thickness isopach (Plate 6-6), and structure contour map of the top of the Hiawatha Seam (Plate 6-7) do not include the South Crandall Canyon Tract.

Hiawatha and Blind Canyon Seam thickness isopachs for the South Crandall Canyon Tract are on Plates 5-2 (H) and 5-2 (BC), and information on interburden is also listed on these

maps. Overburden thickness is shown on Plates 5-2 (H) and 5-2 (BC). Taking into consideration the inherent inaccuracy in the large contour interval needed to map the overburden thickness because of the steep topography, the difference between the Hiawatha and Bear Canyon overburden thicknesses is not significant, so overburden thickness contours are the same on Plates 5-2 (BC) and 5-2 (H).

Subsidence projections for the South Crandall Canyon Tract are on Plates 5-2 (H) and 5-2 (BC). The outcrop and strike and dip of the coal seams in the South Crandall lease are also on these plates. Appendix 6-7 contains a generalized geologic cross-section that parallels the strike of the Mill Fork graben and goes from Rilda Canyon and Mill Fork through the Huntington #4 Mine and Little Bear Spring to Huntington Canyon.

Cultural Resource Maps

The cultural resource map provided for in appendix 4-1A of the MRP did not include the South Crandall lease addition. However Appendix 4-9 of the application includes a letter and a map of the lease area from Gary Gray to Jim Dykman. This information was provided to the SHPO on September 9, 2003.

Existing Structures and Facilities Maps

The Permittee did not need to update the existing structures and facilities maps. Plate 1-1, Crandall Canyon Mine Lease Map, shows that the area is mountainous and that only structure that exists is a U.S.F.S. trail. Plate 4-3, Crandall Canyon Mine Oil & Gas Development, does not show any activity in the South Crandall lease area.

Existing Surface Configuration Maps

The existing surface configuration is shown on several maps including Plate 1-1, Crandall Canyon Mine Lease Map. The existing surface configuration maps concentrated on the disturbed area. Since the disturbed area did not change, the Permittee did not need to update those maps.

Mine Workings Maps

No mine workings exist within the South Crandall lease.

Monitoring and Sampling Location Maps

Drill-hole locations are shown on Plates 5-2 (BC) and 5-2 (H). There are no new water-monitoring points in the South Crandall lease, but the location of Little Bear Spring is on several maps.

Plate 7-12 shows the seep and spring locations for the Crandall Canyon mine and surrounding area. The baseline seep and spring locations for the South Crandall lease area and the additional 40-acre sublease area are shown on this plate as well as in Appendix 7-58. In addition, Plate 7-12 shows the locations of the spring monitoring sites as identified in Section 7.31.21, Groundwater Monitoring Plan, and Table 7-10. Little Bear Spring (LB-11) has been identified as a monitoring site on Plate 7-12. Surface and groundwater monitoring locations for the South Crandall lease area and the additional 40-acre sublease area are shown on an updated map in Plate 7-18.

Based on a recent site visit and discussions with representatives of the Permittee, the Manti-La Sal Forest Service, and the BLM, it has come to our attention that the springs in the Little Bear Canyon watershed as shown on Plate 7-12 and Plate 7-18 are not mapped accurately. In fact, it appears that Spring LB-5a as shown on these plates may not be the actual spring that has been monitored for the baseline monitoring since 1997. This is important because it has created confusion while interpreting Special Lease Stipulation No. 9 for the R2P2. Special Lease Stipulation No. 9 concerns, among other things, subsidence in the Little Bear Canyon area with overburden less than 600 feet.

In order to clarify the locations of the local springs in relation to the geology and longwall mining projections in Little Bear Canyon watershed, the Division will require that a topographic map of the Little Bear Canyon watershed be provided showing the following:

- Surveyed locations and identity of all springs;
- The Hiawatha and Blind Canyon seam outcrop contours;
- The Blind Canyon seam 600-foot overburden contour;
- The Hiawatha and Blind Canyon seam mining projections; and
- Surface geology.

In addition, any changes of the identity and/or locations of the springs should be accurately represented in the text and Plates 7-12 and 7-18.

Subsurface Water Resource Maps

Plate 7-13, Potentiometric Surface of Spring Canyon Member, Star Point Sandstone, is referenced in Section 7.24.1, Groundwater Information, Effects of Mining Operation on Groundwater, of the existing and revised M&RP. The plate should not be removed from the M&RP, nor does it need to be updated to include the South Crandall lease area, as stated in the

Division's first Technical Analysis, dated December 2, 2003 (Task ID #1698). No subsurface water resource map is included for the South Crandall lease area or the additional 40-acre sublease area.

Plate 7-14, Groundwater Rights, has been updated to include the South Crandall lease area and the additional 40-acre sublease area.

Surface Water Resource Maps

Plate 7-15, Surface Water Rights, has been updated to include the South Crandall lease area and the additional 40-acre sublease area.

Plate 7-16, Stream and Monitoring Stations, is referenced in Section 7.24.1, Groundwater Information, Mine Plan Area Surface Hydrology, of the existing and revised M&RP. The plate should not be removed from the M&RP, nor does it need to be updated to include the South Crandall lease area, as stated in the Division's first Technical Analysis, dated December 2, 2003 (Task ID #1698).

Well Maps

No water monitoring wells are proposed for the South Crandall lease area or the additional 40-acre sublease area.

Findings:

Maps, Plans, and Cross Sections of Resource Information are not sufficient to meet the requirements of the Coal Mining Rules. Before the proposed amendment can be approved, the Permittee needs to provide the following information:

R645-301-722.300, the Permittee needs to provide a detailed hydrologic map of the Little Bear Canyon watershed showing geology and mining projections as described under the "Monitoring and sampling Location maps" section of this review document.

R645-301-722.300, the Permittee needs to update and clarify any changes in the identity and/or location of the springs found within the Little Bear Canyon watershed to be accurately represented in the text and on Plates 7-12 and 7-18.

OPERATION PLAN

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Analysis:

Appendix 5-24, Resource and Recovery Protection Plan Approval Letter, was not included in the amendment. The Division uses the R2P2 when evaluating the coal recovery plan. In addition to the approval letter the Permittee needs to state in the amendment what they are doing to maximize coal recovery.

The Permittee plans to mine both seams as shown on Plate 5-2H and Plate5-2 BC. The Permittee has developed a mine plan that will recover as much coal as is economically possible.

Findings:

The information provided in the amendment is not considered adequate to meet the minimum requirements of this section of the regulations. Before, the Division can approve the amendment, the Permittee must provide the following information in accordance with:

R645-301-122, The Permittee must provide a copy of the letter from the BLM concerning the approval of the R2P2.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Renewable Resources Survey

The renewable resources in the area consist of grazing, timber and water. The Permittee stated in the South Crandall amendment that some of the renewable resources in the area were surface and groundwater. The Permittee has designed the mine plan to prevent damage to those resources particularly Little Bear Spring.

Subsidence Control Plan

The updated subsidence plan includes the following information about the South Crandall lease:

- In most of the South Crandall lease, the Hiawatha and Blind Canyon seams will be extracted with by longwall methods. Those areas where full extraction is not permitted by the lease agreement are: 1) Areas under Little Bear Stream with less than 600 feet of overburden, 2) areas within 1,000 feet of the southeast corner of the lease in order to protect the Mill Fork Graben and 3) areas within 1,000 feet of the southern boundary of the lease in order to protect the possible water-bearing fracture system.
- Map 5-2 BC and Map5-2H have been updated to show the area of maximum possible subsidence.
- The subsidence monitoring program for the South Crandall Lease is similar to that of the other areas. The area will have initial survey points established. The area will be aerial surveyed and surface inspections will be done.
- Effects of planned subsidence are anticipated to be a lowering of the surface and temporary tensional fractures at the margins of the subsidence areas.
- Mitigation for any disruption to the Little Bear Spring will be done through construction of a water treatment plant, which will provide replacement water for the spring.

Performance Standards For Subsidence Control

The Permittee is required to keep all performance standards for subsidence controls.

Notification

The Permittee is required to notify the water conservancy district, and all surface owners 6 months before undermining an area. The Division will inspect the Permittee's records to determine if notification was given.

Findings:

The information is adequate to meet the requirements of this section of the regulations.

FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

Analysis:

Endangered and Threatened Species

Of the 16 vegetative and wildlife species, one, the bald eagle, could potentially occur in the permit area. However, the occurrence is most likely to be migration through the area rather than nesting or roosting. Most threatened or endangered species that could occur in Emery County occur at lower elevations than the mine and have no habitat in the proposed permit area expansion.

There have been no confirmed sightings of Black-Footed Ferrets in Emery County in several years.

The mine has potential, through water depletions, of adversely affecting four listed threatened and endangered fish species of the upper Colorado River drainage. The Fish and Wildlife Service requires mitigation when water depletions exceed 100 acre-feet annually. Page 7-12 and appendix 3-18 of the application describe the use of water for mining operations. The information on page 7-12 indicates that approximately 150 gpm, (242 acre/ft/yr), are used in water consumption for mining activities. This was an estimate based on experience at other mines. The most recent submittal dated July 7, 2004 includes calculations in appendix 3-18 that define the actual amount of water used in the mining process and water that is discharged into Crandall Creek. The calculations in appendix 3-18 indicate that 79.4 acre feet per year of water are used in mining processes and approximately 800 acre feet per year of water are discharged into Crandall Creek annually. According to these calculations, the mine would provide a net gain of 729.6 acre feet per year of water to Crandall Creek. According to the Mayo age dating studies, this mine water is old and would not be intercepting the water associated with the springs located above the mine workings.

Bald and Golden Eagles

The bald eagle could potentially occur in the permit area. However, the occurrence is most likely to be migration through the area rather than nesting or roosting. Bald eagles are common in the area during the winter and could occasionally fly through or roost in the proposed lease addition to the permit area. The raptor survey conducted in the spring of 2003 indicated that there were no golden eagle nests in the proposed lease area. The proposed mining in this lease area would have negligible effects on these birds.

Wetlands and Habitats of Unusually High Value for Fish and Wildlife

The springs and riparian areas within the proposed lease area would be considered habitats of high value for fish and wildlife. Since no surface disturbance is anticipated by this permitting action, the only effects on habitat would possibly be from subsidence. Any impacts on fish and wildlife habitat due to subsidence would most likely be negligible.

Findings:

The information provided is adequate to meet the requirements of this section of the regulations.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Groundwater Monitoring

The existing groundwater monitoring plan has been updated to include the monitoring of four springs located within and adjacent to the South Crandall Lease Area and the additional 40-acre sublease area as shown on Plate 7-18. These sites include: Little Bear Spring, a municipal water source, that discharges water from fractures within the Star Point Sandstone and is located approximately 1,000 feet outside of the lease area; site LB-2 that discharges from the Castlegate Sandstone at the south end of the lease area; site LB-5A that discharges from a sandstone channel in the Blackhawk Formation overlying mining operations at the south end of the lease area; and site SP-79 that discharges from the Star Point Sandstone at the northeast portion of the lease area. All of the spring sites will be monitored for the field and laboratory water quality parameters listed in Table 7-4. Protocols for monitoring are listed in Table 7-10 of the M&RP.

As a stipulation of the lease agreement (Special Coal Lease Stipulation #17), the permittee has committed to mitigate for potential disruption to Little Bear Spring through the construction of a water treatment plant. This plant is to be constructed under the provisions of a water treatment plant agreement between Genwal, Pacificorp, and the Castle Valley Special Service District. A copy of the agreement that meets the requirements of Special Coal Lease Stipulation #17 is included as Appendix 7-51.

Surface Water Monitoring

The existing surface water monitoring plan has been updated to include the monitoring of four creeks with six monitoring sites located within and adjacent to the South Crandall Lease Area and the additional 40-acre sublease area as shown on Plate 7-18. The creeks to be monitored include: the intermittent Little Bear Canyon Creek, the ephemeral drainage in SW ¼ of Section 4 T16S R7E (Section 4 Creek), the ephemeral drainage located along the west permit boundary along the border of Sections 5 and 6 T16S R7E, and the intermittent creek in Section 5

T16S R7E that drains into Crandall Creek downstream of the Genwal surface facilities (Section 5 Creek). Little Bear Canyon Creek and Section 4 Creeks will be monitored approximately 100 feet above their confluence with Huntington Creek, the drainage along the west permit boundary will be monitored at station IBC-1 above the confluence with Crandall Creek, and Section 5 Creek will be monitored above the confluence with Crandall Creek and at two stations located at the confluence of the drainages upper left and right forks. All of the creek sites will be monitored for the field and laboratory water quality parameters listed in Table 7-8. Protocols for monitoring are listed in Table 7-10 of the M&RP.

Acid- and Toxic-Forming Materials and Underground Development Waste

The existing M&RP has not been updated for the South Crandall Lease Area or the additional 40-acre sublease area. If waste rock is generated, the mine has committed to a program of testing the waste rock for acid- or toxic-forming materials. If such materials are identified, then the waste rock will be contained prior to proper disposal.

Transfer of Wells

Transfer of wells is not currently considered. Any future transfers will be in accordance with DOGM approval.

Discharges Into An Underground Mine

There are no planned discharges into underground mines for the South Crandall Lease Area or the additional 40-acre sublease area.

Gravity Discharges From Underground Mines

There are no gravity discharges currently planned from the South Crandall Lease Area or the additional 40-acre sublease area. No mention specifically regarding discharge from the lease area is made. The mine must obtain a NPDES permit for any water discharge from the lease area.

Water-Quality Standards And Effluent Limitations

No new disturbed surface areas are proposed for the South Crandall Lease Area or the additional 40-acre sublease area.

Diversions: General

No new disturbed surface areas are proposed for the South Crandall Lease Area or the additional 40-acre sublease area.

Diversions: Perennial and Intermittent Streams

No new disturbed surface areas are proposed for the South Crandall Lease Area or the additional 40-acre sublease area.

Diversions: Miscellaneous Flows

No new disturbed surface areas are proposed for the South Crandall Lease Area or the additional 40-acre sublease area.

Stream Buffer Zones

No underground mining within 100 feet of a perennial stream is proposed for the South Crandall Lease Area or the additional 40-acre sublease area.

Sediment Control Measures

No new disturbed surface areas are proposed for the South Crandall Lease area or the additional 40-acre sublease area.

Siltation Structures: General

No new disturbed surface areas are proposed for the South Crandall Lease Area or the additional 40-acre sublease area.

Siltation Structures: Sedimentation Ponds

No new disturbed surface areas are proposed for the South Crandall Lease Area or the additional 40-acre sublease area.

Siltation Structures: Other Treatment Facilities

No new disturbed surface areas are proposed for the South Crandall Lease Area or the additional 40-acre sublease area.

Siltation Structures: Exemptions

No new disturbed surface areas are proposed for the South Crandall Lease Area or the additional 40-acre sublease area.

Discharge Structures

No new disturbed surface areas are proposed for the South Crandall Lease Area or the additional 40-acre sublease area.

Impoundments

No new disturbed surface areas are proposed for the South Crandall Lease Area or the additional 40-acre sublease area.

Ponds, Impoundments, Banks, Dams, and Embankments

No new disturbed surface areas are proposed for the South Crandall Lease Area or the additional 40-acre sublease area.

Findings:

The information is adequate to meet the requirements of this section of the regulations.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

The Division is updating the East Mountain CHIA to incorporate the expansion of the Crandall Canyon Mine into the South Crandall Canyon Lease Tract.

Findings:

The submittal contains sufficient geologic information for the Division to incorporate the expansion of the Crandall Canyon Mine into the South Crandall Canyon Lease Tract into the East Mountain CHIA.

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